# FOOD TECHNOLOGY

Published Monthly by

The Institute of Food Technologists

Volume 4 November, 1950 Number 11

**EDITOR**

Z. I. KERTESZ
Division of Food Science and Technology
New York State Agricultural Experiment Station
Geneva, New York

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**Publication Office**

Published by the Institute of Food Technologists and printed by The Garrard Press, 119-123 West Park Avenue, Champaign, Illinois.

**Subscription Rates**

Subscriptions are entered for all members of the Institute of Food Technologists. The cost is included in the annual dues.

Non-members: domestic, $7.50 per year; foreign, $8.50 per year.

Single copies and back numbers: domestic, $1.00 each; foreign, $1.15.

**Claims**

Claims for copies lost in the mails must be received within thirty days (ninety days, foreign) of the date of issue. Notice of change of address must be received two weeks before date of issue.

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*Editorial:* Address all manuscripts, proofs, etc., and correspondence concerning these to the EDITOR.

*Non-Member Subscriptions, Back Volumes, Single Copies, and Reprints:* FOOD TECHNOLOGY, 119-123 West Park Ave., Champaign, Ill.

*Members Subscriptions; Changes of Address, etc.:* THE INSTITUTE OF FOOD TECHNOLOGISTS, 176 W. Adams St., Chicago 3, Ill.

*Advertising Manager:* Harley L. Ward, 360 N. Michigan Ave., Chicago 1, Ill.

*Eastern Representative:* Duncan Macpherson, 700 S. Washington Square, Philadelphia 6, Pa.

**Mailing Permit**

Entered as second-class matter February 25, 1947, at the post office at Champaign, Illinois, under the act of August 24, 1912.

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Authors of papers intended for publication in FOOD TECHNOLOGY should request from the Editor's office a copy of a booklet, titled "Suggestions to Authors," and see that their papers are in the form specified therein before they are sent to the editor.

The Institute of Food Technologists assumes no responsibility for statements in contributed articles appearing in FOOD TECHNOLOGY. Editorials present only opinions of the writers and do not necessarily reflect policies of the Institute of Food Technologists.

# Abstracts

(Continued from page 4)

**330J. Lysine deficiency in rats. I. Studies with zein diets.**
KLIGLER, D., AND KREHL, W. A. *J. Nutr., 41,* 215-29 (1950).

Zein, even when supplemented to theoretically adequate levels with the essential amino acids it does not contain, and fed in an otherwise adequate diet, does not promote optimum growth in young rats. The simultaneous addition of arginine, threonine, and valine resulted in a good though not maximum growth response. Similarly, when threonine, valine, and arginine were added together to a proteolytic digest of zein, a fair growth response was obtained. These results appear to support the hypothesis that zein is not adequately digested by the growing rat, and that consequently even when supplemented with a variety of pure amino acids, it does not support a maximum growth response, since all the amino acids essential for protein synthesis are not made available to the animal at the same time.

**331J. Synthetic fatty acids as foods.**
MEYER-DORING, H. H. *Klin. Wochschr., 27,* 113-16 (1949); *Chem. Abst., 44,* 4161a (1950).

The following considerations argue against the use of synthetic fats for food: (1) There is no published procedure for the determination of iso fatty acids, certain of which are definitely toxic. (2) There is no specific method for determining dibasic acids in fats. (3) The many animal experiments which have been cited do not prove the harmlessness of the fats since unsuitable experimental animals were used, the experiments were too short, and improper methods were used for studying liver or kidney damage. (4) There is an increase in excretion of dibasic acids and a strong acidity of the urine and the possibility of kidney damage in human subjects. (5) In human experiments with synthetic fats, their harmlessness was not shown since the experiments were too short and insufficient chemical methods were used. Common clinical methods were often not used. (6) The metabolism of the odd-numbered fatty acids is still not clear.

**332J. The nutritive value of legume seeds. X. Effect of autoclaving and the trypsin inhibitor test for 17 species.**
BORCHERS, R., AND ACKERSON, C. W. *J. Nutr., 41,* 339-45 (1950).

The seeds of 11 species of legumes were fed, raw and autoclaved, to rats as the sole source of protein at a 12% protein level. The jack bean, lentil, velvet bean, horse bean, and black-eyed pea were improved by autoclaving, while the peanut, partridge pea, guar, lespedeza, mung bean, and common vetch were not improved. No correlation was observed between the effect of autoclaving on nutritive value and the presence or absence of the trypsin inhibitor in the raw legume seed.

## FOOD PRODUCTS

### BAKERY PRODUCTS AND GRAINS

**333J. Effect of baking pan material on heat penetration during baking and on quality of cakes made with fat.**
CHARLEY, H. *Food Res., 15,* 155-68 (1950).

Effects of using baking pans made from steel, japanned iron, anodized aluminum, sheet iron, bright aluminum, tinned iron, stainless steel, copper, and glass on heat penetration during baking and on quality of cakes made with fat were studied. The steel, japanned iron, anodized aluminum, and sheet iron were significantly faster baking pans than were the bright aluminum, tinned iron, stainless steel, or copper ones. Thus, the faster-baking pans were those which were dark or dull or both. The quality and appearance of each cake produced is discussed in detail.

**334J. The effects of various treatments of paddy rice on the aneurin and nicotinic acid content of the milled grain.**
DONE, J. *Brit. J. Nutr., 3,* 335-45 (1949).

The effects of treatments of the parboiling type on the aneurin and nicotinic acid content of whole and milled rice were investigated. All treatments resulted in some loss of aneurin in the whole grain. Treatments brought about redistribution of aneurin and nicotinic acid in the grain so that a high proportion of these substances was conserved in the milled product. The most satisfactory product was obtained by soaking paddy rice for two hours at 80°.

### MEAT AND POULTRY

**335J. Processing of sausage and potted meats with particular reference to their water content.**
DAHL, O. Reports of the State Institute of Public Health, Stockholm, Sweden, No. 7, 1-29 (1948) (in Swedish with English summary).

The investigation reported established a quantitative concept of the importance of certain prerequisites in order to assure that the moisture content and quality of the finished product is within desired limits. The factors considered include: uniform beef and pork assortments; standard recipes; routine water determinations on the more important and variable ingredients; adjustment of recipes with reference to such determinations: homogenization of the raw mass; standardization of casings and of all processing conditions.

**336J. Fat rancidity in eviscerated poultry.**
KUMMEROW, F. A., AVERY, T., VAIL, G. E., HITE, J., AND KLOXIN, J. *Bibl. Tech. Rep. 12,* 217 PB 98245 (1949).

The results obtained should make possible the procurement of poultry of predictable cold storage life through an inspection and analysis of the ration for its linolenic acid content. The ration should be linolenic acid free. Rancid fats were shown to have as much nutritive value as fresh fats. The non-acceptability is due to a lack of palatability.

### SALT

**337J. Salt and kraut flavor.**
TUSTIN, JR., E. B. *Canning Trade, 72,* 7, July 3, 1950.

Some packers have used as little as 0.5% salt on cabbage, and under such conditions, the undesirable gram-negative bacteria and certain streptococci may develop before the normal fermentation gets well under way. The resulting kraut is then soft in texture, abnormal in flavor and often very white. With the use of an increased amount of salt—2 to 2.5%—the fermentation process takes place under the most favorable % of salt to produce a quality product. Above 2.5% on the other hand, salt retards the growth of the previously mentioned beneficial first-growing bacteria. The resulting slower production of acid and alcohol favors the development of red and pink colored yeasts and dark spots.

### SANITATION

**338J. Sources of insect and rodent contamination in food processing industries.**
DICKE, R. J. *Pest Control, 17,* No. 10, 13-18 (1949); *Pack. Abst., 6,* 997, No. 3689 (1949).

A two-year study of the confectionery industry showed that accumulations of fragments of insects and rodents hairs throughout the plant were the principal source of contamination, although human hair, nail polish, fragments of clothing and active insect and rodent infestation were also detected. It was noted that filth contamination continued even after the elimination of active insect and rodent infestations. The method of investigation was as follows: food products were examined at all stages in the manufacturing process from their shipping in as raw materials to their final dispatch as finished packs. The manufacturing plant was examined at monthly intervals for insect and rodent faeces, insect webbing and frass, feeding marks on food products and accumulations of dead insects and cast skins. The method of examination and analysis of food residues is described and twelve illustrations of various contaminants are given. The importance of the strict implementation of simple sanitation practices by food manufacturers is mentioned.

(Continued on page 13 following technical papers)

# Notes and Letters

## Improvement in the Medium for Counting Flat-Sour Spores

The accepted medium for the estimation of numbers of spores of flat-sour bacteria in sugar and starch and in cannery samples is that of Williams (*Food Research* 1, 217, 1935) as described in the Methods of Analysis of the Association of Official Agricultural Chemists (6th Ed., 1945). Colonies of flat-sour bacteria are supposed to change the purple brom cresol purple indicator to yellow within and about the colony. Experience with pure cultures of flat-sour bacteria, however, has shown that not all colonies would produce this yellow halo about them in this medium.

A lowering of the buffering capacity of the medium by reduction of the tryptone content from one percent to 0.5 percent improved the medium considerably as is shown by the table. Spores from three pure cultures of flat-sour bacteria were plated in this experiment.

It will be observed that the agar with less tryptone is superior for the estimation of flat-sour spores.

TABLE 1

*A comparison of the production of detectable acid by colonies of several strains of flat-sour bacteria in brom cresol purple agar media containing 1 percent and 0.5 percent tryptone, respectively*

| Strain | 1 percent tryptone | | 0.5 percent tryptone | |
|---|---|---|---|---|
| | Ave. No. Colonies Per Plate | Percent Colonies Lacking Acid | Ave. No. Colonies Per Plate | Percent Colonies Lacking Acid |
| No. 1518 * | 53 | 5.5 | 58 | 0.5 |
| S 5 | 218 | 3.6 | 269 | 0.25 |
| B 30 | 17 | 4.4 | 272 | 0.00 |

* Culture No. 1518 was obtained from the National Canners Association Research Laboratory, Washington, D. C. Culture S 5 was isolated from white cane sugar and culture B 30 from starch.

W. A. Corpe and W. C. Frazier
Department of Agricultural Bacteriology
University of Wisconsin
Madison, Wisconsin

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### U. S. HYBRIDS BOOST EUROPE'S CORN YIELDS

Whether or not a feed grain shortage exists in Soviet lands, farmers in the still free democracies of Western Europe are growing more corn than ever before in their long agricultural history, thanks to U. S. hybrid seed.

Hybrid corn became important to Europe when the German armies retreated from the devastated Danube basin early in 1945. Seed was rushed in by UNRRA, and the resulting crop helped save the lives of some 300,000 Europeans made homeless by the war.

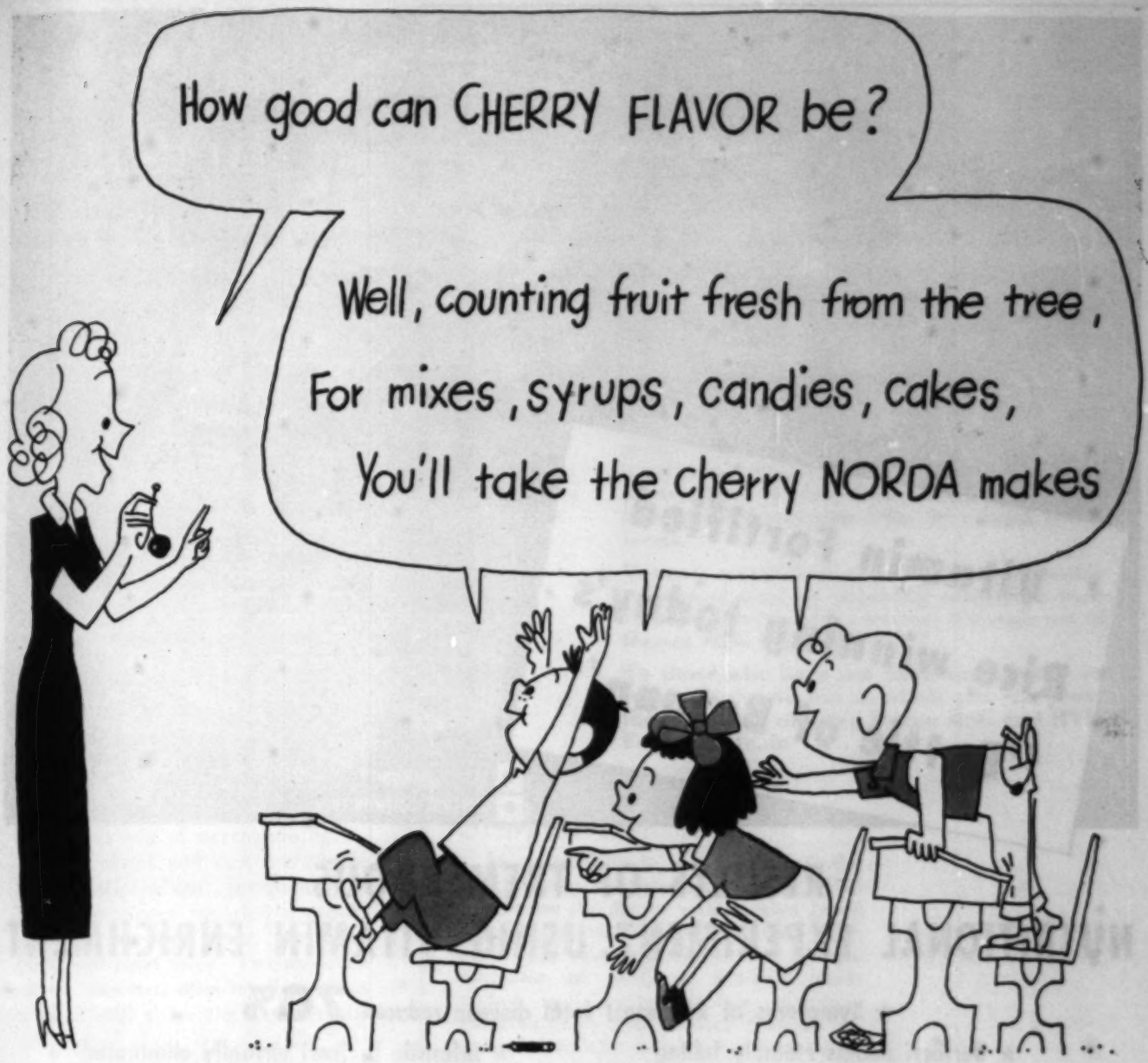
Since then, a lot of U. S. hybrid seed has been planted in Western European fields. It comes from 12 corn belt states, and most of it is handled by Iowa exporters for shipment abroad. According to the Iowa Development Commission, at Des Moines, more than 400,000 bushels of hybrid seed have been exported this year. Now growing on European farms, this seed is expected to treble the yield, in some areas, of the native open-pollinated corn it has replaced.

An Italian agronomist, Professor Luigi Fenaroli, was among the first European agricultural scientists to see the potentialities of hybrid seed for his country. In 1946 he visited Iowa State College, saw what the experiment station was doing with hybrid corn, and went back to Italy to test a number of varieties on his home soil. After completing his experiments he distributed samples of the U. S. hybrid seed among 3,000 Italian farmers for planting alongside their native corn. Comparative yields were so striking that the following year, for 1949 planting, the Italian Farmers' Co-operative arranged to purchase 80,000 bushels—enough to plant 320,000 acres under intensive cultivation. This year, the Italian Co-op. contracted for 100,000 bushels.

Other European countries have similarly tested and accepted the U. S. seed. France planted 1,200 bushels in 1949, and the results were such that French farmers bought for 1950 planting all of the 48,000 bushels their government purchased, and set a rush order for 2,800 bushels more. Before the AMG bowed out of Germany it ordered 200,000 bushels of U. S. hybrid seed for this year's planting, to be sold to individual farmers. The Germans feed corn largely as fodder to dairy cattle, and like the size of the hybrid plants.

Average yield of European open-pollinated corn has been around 22 bushels an acre. U. S. hybrids have upped this figure substantially. On some fields in Italy and Greece, former yields have been trebled. Italy's crop, nationwide, is four million bushels above pre-hybrid totals, on the same acreage. In countries where corn is grown for fodder or ensilage, the American seed is out-producing native open-pollinated corn by about 40 percent.

As corn is planted in most of Europe, a bushel of seed covers about four acres, as compared with seven in the U. S. A. European farmers, whose habits are slow to change, have long been accustomed to thick planting followed by a thinning out of weak plants later. They cultivate intensively, using every available foot of ground. When corn is grown for grain the stalk is usually topped as soon as the ear is filled, and the tops are used for fodder while the ears ripen on the stalks.—(From the Corn Inds. Research Foundation's *Corn*, 6 [3], [1950].)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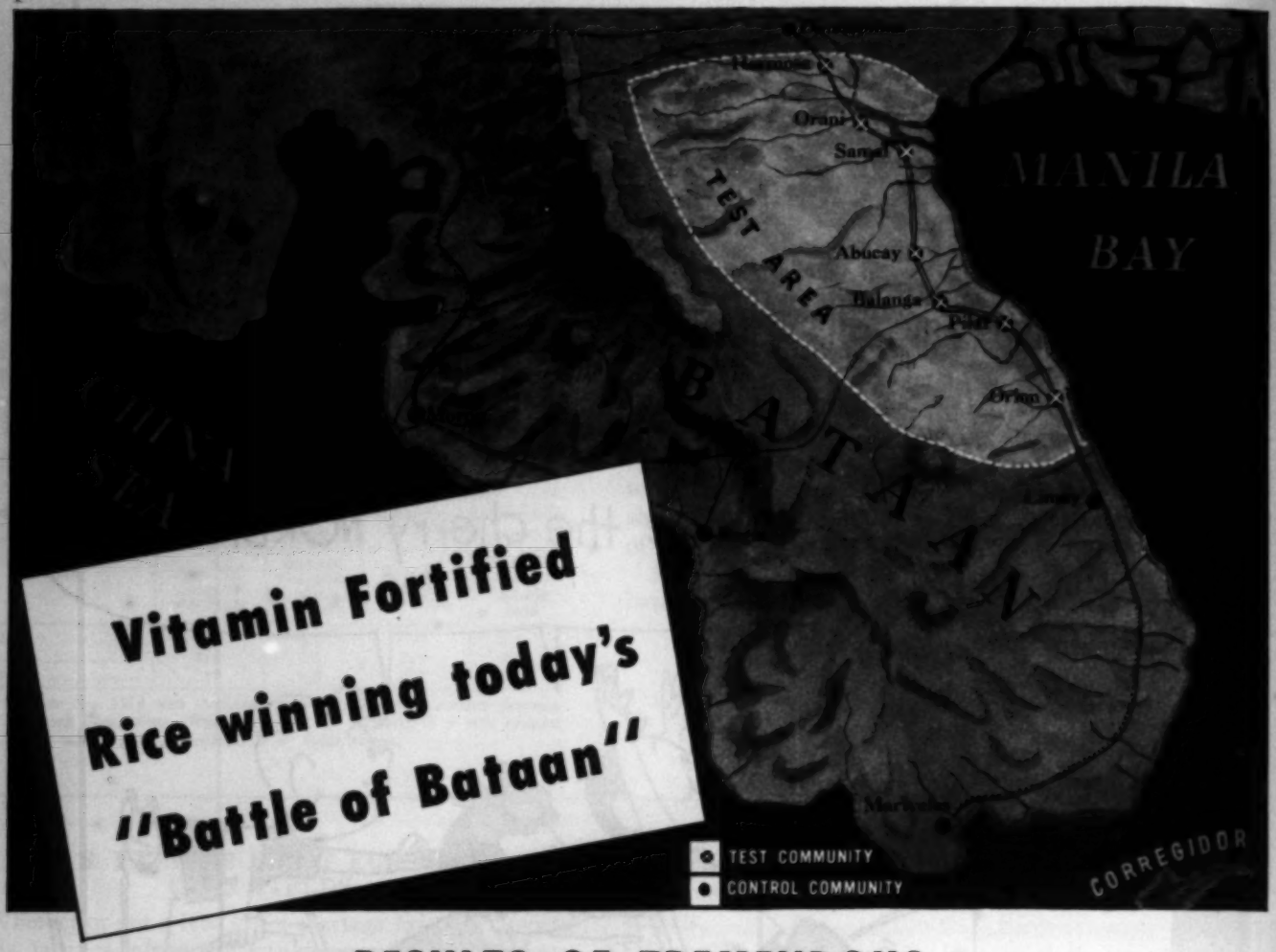


# RESULTS OF TREMENDOUS NUTRITIONAL EXPERIMENT USING VITAMIN ENRICHMENT

## ★ Symptoms of 2nd most fatal disease reduced 70%

## ★ Beriberi deaths steadily falling

**In an experiment in the Philippines now involving over 90,000 persons, conducted with the approval of the Philippine government and medical associations, and in which Hoffmann-La Roche is proudly cooperating, remarkable health benefits from rice enrichment have been demonstrated. This is reported by Juan Salcedo, Jr., M.D., M.A., Director of Nutrition, Institute of Nutrition, Manila, P.I.**

**With rice the principal food, and beriberi the No. 2 cause of death, this new "Battle of Bataan" was planned and waged to determine whether enrichment of rice would reduce the incidence of beriberi. Bataan Province was selected because of its high beriberi mortality and because rice traffic could be readily controlled there. (Early investigation showed enriched rice completely satisfactory in taste, color, odor, palatability and digestibility.)**

***"There are indications from raw data available from the present clinical beriberi resurvey that the beriberi incidence has been reduced by 70%."****

***Beriberi mortality rates have also steadily dropped in the "enriched rice" area without significant change in the control area.***

## ★ Infantile beriberi virtually eliminated

**This dramatic and specific evidence of the benefits of vitamin enrichment should have a vital effect in improving the health of peoples all over the world.**

## WHAT THIS MEANS TO YOU

**While these facts concern white rice, the conclusion is clear that vitamin and mineral enrichment of white bread, family white flour, macaroni, noodles, and other processed cereals is a direct and practicable way of correcting dietary inadequacies. The Bataan work confirms the judgment of nutritional experts who have advocated such enrichment, and further justifies legislation already enacted in 26 States, Puerto Rico and Hawaii requiring enrichment of all family white flour and white bread.**

*Quotation from latest of published interim medical reports. *Write for reprint.*

# ROCHE

## VITAMINS FOR ENRICHMENT

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## MEAT PRE-PACKAGING: WHERE DOES IT STAND?

Anonymous article published in *Modern Packaging* 23, 4, 86 (1949).
Abstracted by Margaret Hazeltine.

"Pre-packaging of cut fresh meats for self-service retail sale has been one of the fastest growing trends in recent years—and at the same time one of the most controversial."

The author states that customers buy more meat when they are offered a pre-packaged selection; also, that a store's volume on other items tends to rise in proportion to the extra sales attracted by the convenience of packaging. However, there have been many complaints by retailers about the difficulties encountered in packaging and preserving cut meats.

The first scientific comprehensive report of the meat pre-packaging business has been compiled by the U. S. Department of Agriculture. Sixty-five chain and 32 independent stores were used for its study. At the beginning of the survey in 1948, these comprised about 25% of all the stores doing meat pre-packaging. Material was collected by means of personal interviews with retailers doing this type of merchandising.

Both stores and customers were enthusiastic about pre-packaging. Fifty-one stores reported a steady general upward trend in pre-packaged meat sales. Twenty-seven others reported sales leveling off at a point still above the high volume established at or soon after the time this new merchandising method was started. With the exception of two, operators of the ninety-seven stores reported enthusiastic reactions by their customers.

The average pre-packaged item consisted of 1.16 pounds of fresh beef—beef made up about one-half the total tonnage—wrapped right in the retail store in cellophane on a tray and topped with a thermoplastic label. The labor cost for handling a pound of meat averaged 4.3 cents per pound for a large store, 5.4 cents for a small store, the greater use and higher cost of skilled labor in small stores being the differentiating factor.

The major problems of pre-packaging divide into three general groups; discoloration, packaging techniques and labor efficiency.

(Continued on page 18)

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# Regional Section News

## DIXIE SECTION

Processing of pimientos was featured on the program of the September meeting of the Section held at Griffin, Georgia. The fifty or more members and visitors attending departed after the meeting feeling that they had a good insight into pimiento processing in Georgia. This state produces 90 percent of the country's output.

An inspection of the plant of the Pomona Products Co. provoked many questions from the group about pimiento growing, costs, yields and marketing. Answers were given by the guest speaker: Dr. H. L. Cochran of the company. An additional highlight of the meeting was an inspection of the research facilities of the Georgia Agricultural Experiment Station, a large part of which is devoted to food research. To Messrs. Sam Cecil, J. G. Woodroof and others of the Station, go thanks for arranging a splendid program and an old-fashioned southern barbecue. The Dixie Section extends a cordial invitation to all food technologists in other parts of the country to visit with them at any of their meetings. Of course, there is not a southern barbecue in connection with all the meetings.

## OHIO VALLEY SECTION

The Section met at Dayton on October 13th, the group assembling at Plant 1 of the Frigidaire Division of General Motors. The tour included the Home Economics Department and Plant 2. The next day there was an Executive Board meeting of the section in the morning and lunch (every man for himself) after the meeting. The afternoon was given over to the technical sessions at the Frigidaire Auditorium in Moraine City, seven miles south of Dayton. The following papers were given:

Opening remarks by Dr. H. D. Brown, The Ohio State University, President, Ohio Valley Section; and Program Chairman D. C. McCoy, Frigidaire Division, General Motors.

"Relation of Temperature to our Daily Lives." F. H. McCormick, Assistant Chief Engineer, Frigidaire Division, General Motors.

"Commercial and Industrial Refrigeration and Air Conditioning." R. E. Robillard, Frigidaire Division, General Motors.

"Refrigeration and Air Conditioning in the Home." R. M. Bell, Frigidaire Division, General Motors.

"Thrills of Freezing," a skit by C. E. Quigley and George Plumly, Appliance Sales Department, Frigidaire Division, General Motors.

"Frozen Poultry Products—Recent Developments." A. R. Winter, Poultry Husbandry Department, The Ohio State University.

There then followed a cocktail hour through the courtesy of Frigidaire Division of General Motors at the Velour Room of the Van Cleve Hotel. Next was the dinner also through the courtesy of the Division. After dinner, there was an interesting address by Mason M. Roberts, Vice President, General Motors Corp., and General Manager, Frigidaire Division.

## PHILADELPHIA SECTION

The Section held a joint meeting with the American Association of Candy Technologists on September 27th at Drexel Institute of Technology. Ernest C. Crocker, since 1922 with Arthur D. Little Inc., Cambridge, Mass., spoke on "The Flavor Approach to Quality." Mr. Crocker is widely known for his studies on flavor and odor and with F. L. Henderson is the author of the "Crocker-Henderson Odor Classification Standards."

## PERSONNEL

CHARLES H. BYRNE, Section Head, Birds Eye-Snider Laboratories, Hillsboro, Oregon, has been transferred to the Birds Eye-Snider Laboratories at Albion, N. Y.

H. C. DIEHL, Director and Secretary of the Refrigeration Research Foundation, and one of the past presidents of the Institute, has moved his office from Berkeley, California to Colorado Springs, Colorado.

DOMENIC DEFELICE, Section Head, Birds Eye-Snider Laboratories at Albion, N. Y., has been transferred to the General Foods Research and Development Department in New York City as staff technologist.

A. WRIGHT DUTCHER, formerly with the National Association of Frozen Food Packers, Washington, D. C., has been appointed plant manager in charge of canned food production of John H. Dulany and Sons, Inc., Fruitland, Maryland.

CONRAD A. ELVEHJEM, Chairman, Department of Biochemistry, and Dean of the graduate school, University of Wisconsin; and CHARLES GLENN KING, Scientific Director, The Nutrition Foundation, New York City have been appointed to the American Board of Nutrition, an organization to establish standards of qualification of persons as specialists in human nutrition.

ELLERY H. HARVEY, founder and past president of the Associates of Research Directors and former director of research at Anheuser-Busch, Inc., St. Louis, has been appointed professor of food technology at Illinois Institute of Technology. Dr. Harvey has been research chemist with Swift and Co., director of laboratories Montgomery Ward and Co., and chief chemist for Wilson and Co. He received his Ph.C. and Ph.M. (1916 and 1921) from the Philadelphia College of Pharmacy and Science; A.B. and A.M. (1923 and 1924) Bucknell University; Ph.D. (1926) University of Wisconsin; Ch.E. (1929) Bucknell, and LL.B. John Marshall Law School (1932). He was president of the Institute of Food Technologists 1946-1947. But we still think that the only men that became famous by degrees were Centigrade and Fahrenheit.

J. M. LEMON, chief of the technological section in the Branch of Commercial Fisheries, Fish and Wildlife Service since 1943, has been appointed to a new position as refrigeration specialist in that Branch. His headquarters will be at the Fish and Wildlife Service's laboratory on the campus of the University of Maryland, College Park, Maryland.

(Continued on page 17)

# Abstracts

(Continued from page 8 preceding technical papers)

**339J. Food contamination from the new insecticides.**

DUBOIS, K. P. *J. Am. Diet. Assn., 26,* 325-8 (1950).

In the case of the chlorinated hydrocarbons such as DDT, acute poisoning from single doses is rare. However, chronic poisoning from continued ingestion of the materials is demonstrable in animals, and the stability of these agents, together with their tendency toward accumulation and storage in the tissue lipoids, places emphasis on the necessity of avoiding food contamination through the use of excessive amounts of these materials. Information regarding the possible effects of ingestion of small quantities of these agents over long periods of time must await the results of further experimentation. With organic phosphorus-containing compounds now in use, acute poisoning has been the problem of major concern. The tendency of these insecticides to undergo rapid hydrolysis to nontoxic materials in the presence of moisture makes chronic poisoning unlikely. Thus far, no evidence indicating the possibility of poisoning through food contamination by the organic phosphates used as contact insecticides has been obtained. The organic phosphates which are systemic insecticides by virtue of their ability to be absorbed by plants are more hazardous than the other organic phosphates, and it appears that these new agents should be employed with caution to prevent the possibility of accidental poisoning.

## SUGARS

**340J. Sugar from palm trees.**

*Science, N. L., 57,* 372 (1950).

The addition of 0.008 oz. of sulfanilamide to a gallon of palm juice prevents fermentation of the sugar in the juice. Since palm juice contains 10% to 14% sucrose, the use of this preservative should open a valuable source of sugar to the world's supply.

## PATENTS

**341J. Process for producing a soluble aromatic coffee extract.**

HOLZER, T. Assignor to E. Osswald. 2,511,712. June 13, 1950.

A process for producing a fully soluble aromatic coffee extract in powder form, comprising the steps of mixing 100 parts by weight of green coffee with about 20 to 30 parts by weight of a carbohydrate of the group consisting of glucose, dextrose and maltose, partially roasting said mixture, lixiviating said partially roasted product with water, concentrating the extract by evaporation and again roasting the residue of said evaporation for the purpose of further aromatizing same, the said carbohydrates having the property of not furnishing any caramelizing products in the process, which would impair the coffee aroma.

**342J. Process of recovering caffein.**

SHUMAN, A. C. Assignor to General Foods Corporation, 2,508,545. May 23, 1950.

A process for recovering caffein from a solution obtained by aqueous extraction of coffee which comprises extracting the aqueous extract with a water-immiscible organic caffein solvent, redissolving the solute from organic solvent solution in water, adjusting the pH of the resulting aqueous solution to a value of at least 7.0 by the addition of an alkali base, and crystallizing the caffein therefrom.

**343J. Method of treating chocolate raw materials.**

AASTD, K. C. S. 2,515,150. July 11, 1950.

A method for converting chocolate raw material comprising cocoa mass and sugar into a mass of plastic consistency, which comprises subjecting the raw material to a single vigorous pressure of the order of magnitude of 200 kg. per sq. cm.

**344J. Shortening agent.**

BARSKY, G. Assignor to E. F. Drew & Co. Inc. 2,509,414. May 30, 1950.

(Continued on page 14)


# Bulls See RED?

**Bulls are color-blind. Scientists have disproved the theory that they "see red." Famous matadors agree that when "El Toro" blows his top at sight of a waving red cape, it's the waving . . . not the red . . . that riles him.**

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Write to nearest regional secretary, if within an area covered by a regional section, or to the Executive Secretary of the Institute, for an application form and information regarding qualifications and classifications.

# Abstracts

(Continued from page 13)

A shortening agent comprising a glyceride oil having shortening properties, and the reaction products of mono- and diglycerides of higher fatty acids of vegetable and animal oils with a water soluble acid having the general formula—$R(OH)_n(COOH)_n$—wherein R represents hydrocarbon groups having from 1 to 5 carbon atoms, and $n$ is 1 or 2, the OH groups of the glycerine radical being substantially fully esterified.

**345J. Stabilized oleaginous materials.**

BUXTON, L. O., AND DRYDEN, C. E. Assignors to Nopco Chemical Company. 2,511,427. June 13, 1950.

A process for the stabilization of fatty materials which comprises admixing a relatively small quantity of a phosphatide with a fatty material, heating the mixture in contact with ammonia, and subsequently removing from the mixture the free ammonia which is admixed therewith, the ammonia combined with fatty acids in the mixture and any water which is present in the mixture, said removal of the ammonia and the ammonia and the water being accomplished by heating the mixture under reduced pressure until the ammonium soaps therein are split into free ammonia and free fatty acids, and the ammonia is removed from the mixture leaving the free fatty acids in the mixture.

**346J. Antioxidants.**

BUXTON, L. O., AND DRYDEN, C. E. Assignors to Nopco Chemical Company. 2,511,428. June 13, 1950.

A process for enhancing the antioxidant activity of a phosphatide which comprises heating in contact with ammonia a mixture of a phosphatide and a volatile organic solvent in which the phosphatide is at least partially soluble, said solvent having a boiling point of at least about 40° C., the heating being carried out at about the reflux temperature of the solvent, and thereafter removing from the phosphatide the free ammonia admixed therewith, the ammonia combined with the fatty acids in the phosphatide, the volatile organic solvent and any water which is present in the mixture, said removal of the ammonia, the water and the solvent being accomplished by heating the phosphatide under reduced pressure until the ammonium soaps therein are split into free ammonia and free fatty acids and the ammonia is removed from the phosphatide leaving the free fatty acids in the phosphatide.

**347J. Synergistic antioxidant.**

HALL, L. A. Assignor to The Griffith Laboratories, Inc. 2,511,802. June 13, 1950.

An antioxidant composition comprising an organic acid of the class consisting of benzoic, fumaric, tartaric and citric, and an ester of the class consisting of low molecular weight alkyl esters of gallic acid and ascorbyl esters, the proportion of the acid being 3 to 50% of the total of the acid and ester being 97 to 50% of the total of the acid and ester, and in which the total of the respective proportions are such as to give a synergistic effect in said antioxidant composition.

**348J. Antioxidant flakes.**

HALL, L. A. Assignor to The Griffith Laboratories, Inc. 2,511,803. June 13, 1950.

An antioxidant composition comprising from 99.97 to 98.55% by weight of a solid hydrogenated fat in the form of flakes having dissolved therein from 0.015 to 0.70% of an antioxidant acid of the class consisting of benzoic, fumaric, tartaric, phosphoric, ascorbic and citric acids and from 0.015 to 0.75% of a gallic ester of the class consisting of methyl, ethyl, propyl, butyl, hexyl and lauryl gallates.

**349J. Antioxidant salt.**

HALL, L. A., AND SAIR, L. Assignors to The Griffith Laboratories, Inc. 2,511,804. June 13, 1950.

An antioxidant composition comprising about 0.015 to 0.35% by weight of an antioxidant acid of the class consisting of benzoic, fumaric, tartaric, phosphoric, ascorbic and citric

# Abstracts

acids, about 0.015 to 0.35% of a gallic ester of the class consisting of methyl, ethyl, propyl, butyl, hexyl and lauryl gallates, and about 0.070 to 0.30% of a non-toxic polyhydric alcohol associated with a carrier for the antioxidant comprising table salt, proportions being by weight of the composition including the table salt.

**350J. Process of preventing rancidity of cooking fats.**

DOOLIN, E. B. 2,514,479. July 11, 1950.

The process of storing used cooking fats which have been heated to cooking temperatures to prevent rancidity and prevent peroxides of more than 12.0 from forming in the fats during periods of non-use, which includes the steps of heating the fats to a temperature of at least 330° F., placing the fats into a container capable of being made air-tight and completely filling the container with the fats while the temperature of the same is at least 330° F. to thereby displace all air from the container, sealing the container to make the same air-tight, and thereafter permitting the fats to cool and contract to form a vacuum in the container and storing the cooled fats in such condition until they are ready for re-use.

**351J. Process for stabilizing edible fatty oil.**

LINDSEY, JR., F. A., AND MAXWELL, W. T. Assignors to The Southern Cotton Oil Company. 2,513,948. July 4, 1950.

The process of stabilizing an edible fatty oil which comprises adding thereto a small proportion of substantially isolated citric acid and heating the mixture to within a range of 120 to 190 degrees centigrade and continuing the heating for the time required, varying with the pressure and with the temperature within such range, to break down a substantial part of the citric acid into aconitic acid and aconitic anhydride acid and arresting the process before the formation of more than a minor proportion of aconitic anhydride relative to the proportion of the aconitic acid and aconitic anhydride.

**352J. Mineral pellets.**

ZELLERS, M. W. 2,512,537. June 20, 1950.

In the production of animal and poultry feeds of the vitamin-mineral-protein and weather-resistant type, wherein the mineral content comprises from 25% to 80% by weight of the content of the feed, and wherein the feed is produced for service in the form of pellets and tablets acceptable palatably under voluntary feeding conditions, the method of producing the feed to render the mineral content palatable to animal stock and poultry, said method consisting in admixing the selected ingredients within an agitator and in accord with a predetermined order as follows: Initially present the mineral content in ground form and agitate, then add the vitamin elements including liquid yeast, then adding a dried molasses content and the protein content, and finally adding additional liquid yeast to form a semi-crumby mass, all the while maintaining agitation, then subjecting the mass to a blending operation in presence of steam under approximately ten pounds pressure, and then forming the pellets and tablets by compression thereby to provide complete equable distribution of the ingredients throughout the pellet and tablet to present these in a form adapted for administration to the animal and fowl by the voluntary "licking" activities of the animal and the voluntary "pecking" activities of the fowl with the equable distribution of the prepared content such as to assure the voluntary acceptance as to palatability by the animal and fowl.

**353J. Animal food manufacture.**

HAUGH, R. R. Assignor to Kraft Foods Company. 2,508,112. May 16, 1950.

The process of making an animal feed material which comprises making a mixture of the desired food ingredients containing on the dry basis, 15 to 70% lactose and the remainder including protein feed materials, adjusting the moisture content of the mixture to a point where the mixture contains from about 10 to 30% water thereby producing a plastic mass, extruding the mixture under heavy pressure, and sub-dividing the extruded material into pellets.


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# NATIONAL SCIENTIFIC REGISTER

***The Following Is of Vital Importance to Every Food Technologist. Do Not Turn This Page Without Reading Every Word of It.***

At the request of the National Research Council and the Federal Security Agency, The Institute of Food Technologists is participating in compiling the NATIONAL SCIENTIFIC REGISTER. In order to acquaint our members with this project, the following release by the Federal Security Agency, Office of Education, Washington, D. C., is quoted:

Within the next few months, approximately 150,000 American scientists and technologists will be asked to participate in one of the most comprehensive registrations of scientific personnel yet attempted by the Government. Final plans have been completed for this operation by the National Scientific Register, sponsored by the National Security Resources Board, and administered by the Office of Education, Federal Security Agency. The registration will include qualified scientists in the natural and physical sciences, and will be accomplished through the direct assistance of the principal professional and scientific societies. The purpose of the registration is to provide urgently needed information on the country's supply of technological personnel in the many scientific fields—information needed for both immediate and long-range mobilization planning.

The need for an analytical index of American scientists became apparent to the NSRB when lack of specific information began seriously to hamper efforts to prepare complete and comprehensive mobilization plans. Provision has been made for such a register in legislation creating the National Science Foundation. However, because of the international situation early in 1950, the NSRB decided that this important function could not be delayed longer, and that some interim action should be taken pending the creating of the NSF. Accordingly, the National Scientific Register was established in the Office of Education in the summer of 1950. James C. O'Brien of the Office of Manpower, National Security Resources Board, who formerly headed the wartime National Roster of Scientific and Specialized Personnel, was named Director of the new enterprise.

The National Scientific Register was given the responsibility for providing answers to two pressing questions in the over-all manpower problem: (1) What are the characteristics of the supply of scientific and technological manpower in the country? and (2) What will be the requirements for scientists and technologists in all phases of mobilization?

It appeared that the only practical method of obtaining answers to the first of these questions was to effect a registration of scientists by means of questionnaires designed to obtain the specific types of information required. The whole project is a voluntary one with the scientists themselves cooperating with the Government to make the enterprise a success. Committees of leading scientists in each of the fields to be covered were consulted and an effort was made to develop specialty check lists which would serve as the basis for all of the various types of studies required.

The scientific fields to be included in the present registration are as follows: physics, chemistry, the biological sciences, geology, geophysics, meteorology, astronomy, mathematics, and crystallography. Registration will not be made in the engineering fields at this time since the recent study of American engineers, sponsored by the Office of Naval Research and completed under the direction of the Engineers Joint Council, has been made a part of the National Scientific Register. When registrations in the fields of science just named have been completed, it is anticipated that a follow-up study will be made in the fields of engineering to complete the coverage.

The problem of ascertaining and projecting requirements for scientific personnel is more difficult and research studies are being set up to determine the best means of obtaining required data and coordinating efforts of the various governmental agencies in attacking the over-all problem.

Information obtained through circularization of scientists will be analyzed and interpreted by a special coding group, and the results will be recorded in an electronic punch card system. A survey was made of the various newly developed techniques for the mechanical recording, tabulating, and interpreting of such data, and the Register has adopted several new devices which should result in the most advanced system of personnel registration developed.

The National Scientific Register project has been given a high priority by the NSRB in view of the critical role played by American science in the last war, and in recognition of the fact that American security and supremacy in a future war will depend to an important degree on the total utilization of scientific and technological skills. For this reason, it is considered important that every scientist who is circularized in the current registration, return his questionnaire as quickly as possible. Important statistical studies need to be undertaken at an early date, and the comprehensiveness of data included in these studies will be an important factor in the total mobilization planning effort of the Government. While the National Scientific Register at present does not envision a large-scale placement function, data obtained from individual scientists will be recorded in such a manner that the system will lend itself to whatever type of placement or distribution program might be required in an all-out mobilization effort, should one occur.

The Institute of Food Technologists has accepted responsibility for the registration of scientific and technological personnel in the field of FOOD TECHNOLOGY. This applies not only to members of the Institute, but to all scientific and technological personnel in our field.

Registration consists of completing a check list questionnaire, placing it in a franked reply envelope, and dropping it in the nearest mail box. The questionnaire has been simplified as far as possible consistent with obtaining the essential information, and can be filled out by anyone in about 15 minutes. Certain minimum qualifications for those to be registered have been established for the various groups. The minimum qualifications for registration in the field of Food Technology will be those for Professional Members in the Institute. (For these qualifications see Article VI, Section 2, Institute Constitution, published in October FOOD TECHNOLOGY.)

Present plans call for registration of Chemists and Chemical Engineers through the American Chemical Society, Physicists through the Institute of Physics, and Engineers through the Engineers Joint Council. Questionnaires for some of the other groups will be distributed prior to distribution of Food Technology questionnaires. Therefore, many members of the Institute will receive questionnaires from other sources, due to membership in those societies. If the individual desires to register in the broader field of Food Technology, rather than in a specific science field, he may disregard the other questionnaire and await the arrival of the Food Technology questionnaire.

It is desired to point out that the present registration is entirely voluntary. However, should we become involved in a major emergency there is little doubt that registration will become compulsory. The supply of scientific and technological manpower in the United States is so limited that the most effective use of this group is of major importance. It is felt that in order to secure maximum effective utilization of scientists and technologists, it will be necessary that their registration and utilization be handled by some group other than the War Manpower Board or Selective Service. The use of the National Scientific Register which is being set up by the Federal Security Agency will be by qualified scientists, capable of evaluating needs for scientific personnel and passing on the qualifications of individuals, rather than by laymen.

It will be of considerable assistance if members will bring to the attention of their fellow scientists and technologists who meet the minimum qualifications, but who are not members of the Institute, the importance of this registration, and request them to simply place their name and address on a penny post card and mail to the Executive Secretary of the Institute. This will insure those individuals receiving a questionnaire. The Institute is asking various industrial associations in our field to lend assistance in compiling lists of scientists and technologists within their groups. We hope to begin mailing questionnaires within the next four or five weeks.

In view of the enormous load of clerical work involved in this registration, it will be impossible for my office to reply to individual inquiries concerning registration.

CHARLES S. LAWRENCE
Executive Secretary
176 W. Adams Street
Chicago 3, Illinois

## News of the Institute

(Continued from page 12)

DONALD A. MORGAN, formerly located at the Weslaco, Texas fruit and vegetable laboratory of the Bureau of Industrial and Engineering Chemistry, U. S. Department of Agriculture, has been transferred to the Winter Haven, Florida laboratory of that Bureau as chemical engineer.

ROGER H. LUECK, formerly manager of sales for the Pacific Division of the American Can Co. has been appointed general manager of research of the Company with headquarters in New York City. Dr. Lueck is a graduate of Carroll College and received his M.S. from Wisconsin, and in 1943 an honorary D.Sc. from Carroll College. And did you see Roger's picture recently on the financial page of the *New York Times?*

ALBERT H. NAGEL, associate chemist, Birds Eye-Snider laboratories at Albion, New York, has been transferred to the Hillsboro, Oregon laboratories as Section Head.

JOHN H. NAIR, assistant director of research for Thomas J. Lipton Inc., Hoboken, N. J., who is also chairman of the American Chemical Society's 75th Anniversary Committee appears on the cover of the September 4th issue of *Chemical and Engineering News*. Read all about John on page 3046 of this issue of *Chemical and Engineering News*.

WILLIAM L. RAINEY, formerly chief chemist for Commander-Larabee Milling Co., Minneapolis, has been promoted to vice-president and technical director of that company.

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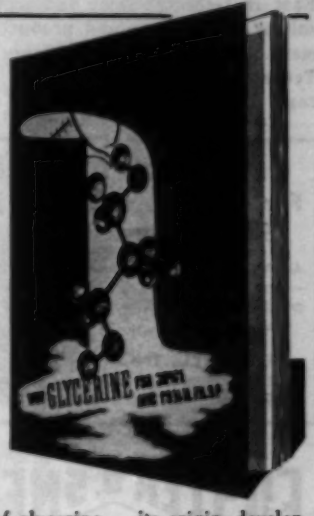


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## Meat Pre-Packaging: Where Does It Stand?

(Continued from page 11)

Discoloration was the chief complaint. It is actually the principal factor in determining the life of the pre-packaged meat in display cases. Over half of the departments reported their customers highly critical of color and "bloom" in pre-packaged meats. Ninety-five percent of the departments also reported that customers discriminated against meat that naturally cuts dark.

All stores have been trying hard to reduce discoloration. Some techniques used before wrapping were: plattering before wrapping, using oxygenic paper and allowing a blooming period. After wrapping, 90 of the 97 stores were turning packages face down, keeping the meat well refrigerated, and placing packages on display only as needed. Actual spoilage did not prove much of a problem; 78 of the 97 stores reported it amounted to less than 1% of sales.

All films used in wrapping were criticized. Foremost of the complaints were: lack of visibility, does not seal readily, breaks or crumbles frequently, and fails to prevent discoloration.

The stores reported it would take considerable equipment to handle a large volume of pre-packaged meat. Most of them, however, were getting by on the minimum of equipment. One of the indispensables was an attractive refrigerated display case. —*Commercial Fisheries Abstracts*, April, 1950.

## REFRIGERATION IN BREADMAKING

Information relating to temperature, humidity, air movement, and apparatus to obtain desired results in breadmaking within the refrigeration range is presented in the latest Application Data Section issued by the American Society of Refrigerating Engineers.

Methods of applying refrigeration to the storage of ingredients, accessories, and wrapping machines are considered along with dough mixer and ingredient water cooling, and air conditioning for fermentation rooms and bread coolers. Besides being profusely illustrated, the six-page pamphlet contains tables giving typical equipment specifications used in the industry and the range of temperature and humidity for a fermenting room.

"Refrigeration in Breadmaking," was written by W. J. Hoffman, president of the Arctic Engineering Company Inc., New York City. Copies may be obtained from ASRE headquarters, 40 West 40 Street, New York 18, N. Y., at 40c each. (Am. Soc. Refrig. Eng., News Item, July, 1950).

## EMPLOYMENT NOTICES

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**Wanted, Food Chemist, M.S. or Ph.D. or equivalent experience in food chemistry. Work involves research in development of new chemicals for use in food industries. Southeastern Location. Give full details in first letter and a photograph. Excellent opportunity for advancement. Reply Box 115, Institute of Food Technologists, 176 W. Adams St., Chicago 3, Ill.**

**Position wanted, graduate Food Technologist, eleven years varied experience in canning, freezing, preserves, pickles, government inspection, desires position in East in technical sales and service, consulting, or research and product development. Reply Box 116, Institute of Food Technologists, 176 W. Adams St., Chicago, Illinois.**


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# people preferred his corned beef hash WITH AC'CENT!

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"We doubt that there is any practical way to improve the flavor of our corned beef hash," said a prominent food packer. Yet he agreed to a test run in which a bit of Ac'cent was added in the processing of his product.

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**With the 592 individuals who stated a preference, the hash *with* Ac'cent was preferred 5 to 2!**

The result of this test, on file in our offices, is another of the many proofs that Ac'cent is a discovery that merits investigation by every processor of food. For never before has it been possible to heighten the flavor of food by so simple, so inexpensive an additive.

AT NO OBLIGATION TO YOU, we will welcome the opportunity to demonstrate what Ac'cent can do *in one of your own foods*. Following that demonstration, if a consumer test is considered desirable, we will pay the cost of it, including payment for the materials used! Wire or phone for full information.

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**International Minerals & Chemical Corporation**
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**Ac'cent** is not a flavoring, not a condiment. It adds no flavor, aroma or color of its own. It brings out—and holds—the *natural* flavors of foods. With Ac'cent, you use your own formulas: prepare as usual—just add Ac'cent.

Ac'cent is a 99+% pure monosodium glutamate, a wholesome vegetable derivative. 100 and 200 lb. drums.

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**makes food flavors sing♪**

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*The newest advance in the art of flavoring*

**SPISORESINS, the result of six years of research and development in the D&O Laboratories, are now offered to food manufacturers seeking the best flavoring ingredients. SPISORESINS are special extractions of dry spices and contain all of the flavoring qualities that are in the spices themselves, and are not to be confused with essential oils.**

**SPISORESINS of all important spices such as Allspice, Cinnamon, Clove, Garlic, Nutmeg, Onion, Black Pepper and Sage are available. The Dodge & Olcott Laboratories have also developed sixty SPISORESINS MIXTURES including every important flavor used in the meat processing industry. Bologna, Braunschweiger, Deviled Ham, Liverwurst, Turkey Loaf and Salami illustrate the complete flavor range of SPISORESINS.**

**SPISORESINS, in addition to being paramount flavors, are easy to use. SPISORESINS are even-spreading of uniform strength, properly balanced and are free from the bacteria, molds and yeast spores frequently found in dry spices.**

**Practical suggestions for the use of SPISORESINS will be sent on request.**

***"D&O News", the Dodge & Olcott bi-monthly publication, is especially planned to provide timely and useful information on matters essential to the conduct of your business. Ask to be put on the mailing list.***

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## Book Review

CANNED FOODS IN HUMAN NUTRITION. E. J. Cameron and J. Russel Esty, Editors. National Canners Association, Washinton, D. C., 1950, 264 pages, many tables and illustrations.

The purpose of this attractive booklet is to provide a convenient and authoritative reference source on the nutritive values of commercially canned foods, their proper handling and preparation for use by the ultimate consumer, and their practical applications in meeting the optimum requirements of human nutrition.

The volume includes sections on "Modern concepts of nutrition," "Nutritive value of canned foods" and on "Storage and utilization of canned foods" followed by an appendix of eleven tables giving the proximate composition, nutrient content etc. of foods.

This booklet will be a valuable reference source for all those concerned with processed foods and nutrition, whether from the production or research angles. It will also aid teachers of food technology, home economics, nutrition and of many other subjects. The fine index and bibliography add greatly to the usefulness of this volume. (ZIK).

INTRODUCTION TO THE BACTERIA. By C. E. Clifton. McGraw-Hill Book Company, 1950. (528 pages). Price $5.00.

The factors influencing the death and survival of bacteria, such as temperature variations, disinfectants, antibiotics and other practical methods of destruction are discussed in detail in this book which also contains several good chapters on the bacteriology of soil, water, and air; the preparation and preservation of food; industrial microbiology; infectious diseases, and infection and resistance.

This text is not necessarily recommended to the student or technologist desiring to refer to it with the intention of practical application. Although the author describes the general staining properties of bacteria, the book is not a manual of laboratory practices. The descriptions of methods of staining and of systematic study, as for instance the Bergey system of identification, are not entirely adequate. However, this is not a serious criticism of a book designated as an "Introduction," especially since many other texts are available on techniques and classification.

This is a good text for the person desiring a general knowledge in the science of bacteriology. The book is simple in presentation, yet theoretical enough to afford an interpretation of the basic aspects. It furnishes the reader with an adequate understanding of the origin of bacteria, their structure, morphology, habitats and growth requirements. These subjects are well illuminated with a wealth of illustrations and photomicrographs of bacteria, yeasts and molds.

ALFRED RUMMINGER.

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# Regional Section News

## NORTHEAST SECTION

The Section met on October 5th at Patten Restaurant, Boston, Mass., for cocktails, dinner, a business meeting and an address. Major Grant Healy, Dept. of the Army, Office of the Quartermaster General, Washington, D. C., addressed the group on "Industrial Mobilization Planning for Military Food Requirements."

Officers and Committee memberships for 1950-1951 are as follows:

Chairman: Newton R. Cole, Walter Baker Co., Dorchester, Mass.

Vice Chairman: Michelle P. Vucassovich, Gorton-Pew Fisheries Co. Ltd., Gloucester, Mass.

Secretary: Charles H. Shackelford, Great A. and P. Tea Co., Boston.

Treasurer: Loren B. Sjostrom, Arthur D. Little Co., Inc., Cambridge.

National Councillors: Ernest C. Peakes, New England Confectionery Co., Cambridge; W. B. Esselin, Jr., University of Massachusetts, Amherst.

Executive Committee: Robert S. Harris, Department Food Technology, Massachusetts Institute of Technology, Cambridge; John M. Milne, Dorothy Muriel's Inc. Allston Station, Boston.

Committee Chairmen:

Hospitality: Jean F. Caul, Arthur D. Little Co., Inc., Cambridge.

Nominating: Dean Samuel C. Prescott, Massachusetts Institute of Technology, Cambridge.

Program: Michelle P. Vucassovich (Vice Chairman).

Budget: Loren B. Sjostrom (Treasurer).

Auditing: Mason T. Rogers, Dewey and Almy Chemical Co., Cambridge.

Membership: Samuel A. Goldblith, Department of Food Technology, Massachusetts Institute of Technology, Cambridge.

Publicity: Richard D. Martin, 9 Rockaway Avenue, Marblehead.

Employment: Lyle M. Richardson, 164 Broadway, Cambridge.

Professor B. E. Proctor was elected by the Executive Board to chair a committee for establishment of the Samuel Cate Prescott Award, annual award to be given by the Northeast Section for recognition in food technology. The nature of the award, qualifications of recipients, time and place of presentation are now under consideration.

## PUGET SOUND SECTION

The October meeting was held on the 19th at The Chalet in Seattle. Speaker for the evening was Dr. Charles R. Stumbo, Associate Professor of Horticulture, Washington State College, Pullman. His subject: "Evaluation of Temperature Effects on the Sterilization of Foods." Dr. Stumbo received his doctorate from Kansas State University in 1941 and has accomplished outstanding research on problems relating to thermal microbiology in the field of food processing. Prior to coming with Washington State he was chief of the bacteriological section, Food Machinery and Chemical Corp., San Jose, California.

## SOUTHERN CALIFORNIA SECTION

Dr. Clinton H. Thienes, Professor of Pharmacology and Toxicology, University Southern California Medical School, addressed the Section at their September meeting. Dr. Thienes spoke on "Food Poisoning Due to Chemical Contamination." In connection with work in this field, Dr. Thienes was in favor of an initiative on the Los Angeles ballot which will make it possible for medical research laboratories to obtain animals from the city pound for experimental purposes. It is quite possible that Dr. Thienes is not very popular with the antivivisectionists.

A symposium on carotene featured the October meeting. Professor L. Zechmeister of California Institute of Technology acted as chairman of the panel. Dr. Harold M. Barnett, Barnett Laboratories, Long Beach, California discussed the extraction of carotene from carrots; Samuel M. Greenberg, University of Southern California Biochemistry Department spoke on the use of carotene in the coloring of margarine.

Officers for the coming year were installed at the September meeting:

Chairman: F. L. Hart, Food and Drug Administration, Los Angeles District, Los Angeles.

Chairman-elect: H. J. Deuel, Jr., University Southern California School of Medicine, Los Angeles.

Secretary-Treasurer: M. G. Morehouse, University Southern California Medical School.

Assistant Secretary-Treasurer: G. L. Merchant, Merck and Co., Inc., Los Angeles.

Executive Committee: F. H. Hunicker, Continental Can Co., Los Angeles; P. J. Rich, Mission Dry Corp., Los Angeles; J. B. Pardieck, California Vegetable Concentrates, Inc., Huntington Park, California; J. S. Lawless, Frosted Fruit Products, Los Angeles; L. B. Rockland, Bureau Agricultural and Industrial Chemistry, U. S. Department of Agriculture, Pasadena.

Section Councillors: M. S. Dunn, University California, Los Angeles; A. N. Prater, Gentry Inc., Los Angeles; M. S. Burns, Mardon S. Burns and Associates, Los Angeles; R. E. Cox, Bireley's Division, General Foods Corp., Hollywood, California.

## GREAT LAKES SECTION

The Fall meeting was held on November 10th at the Battle Creek Country Club, Battle Creek, Michigan. Afternoon papers were:

"Quality Control in the Breakfast Cereal Industry." Jack Trout, Head Quality Control Department, Kellogg Co., Battle Creek.

"Quartermaster Cereals and Baked Products Problems." Theodore Soloski, Chief, Cereal and Baked Products Division, Food Laboratories, Quartermaster Food and Container Institute for the Armed Forces, Chicago, Ill.

(Continued on page 14 following technical papers)

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